

Perspective of Energy Policy in the U.S.

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LA-UR-04-2120

4th Tsuruga International Energy Forum

Tsuruga, Japan

April 26-27, 2004





U.S. National Energy Policy encourages the expanded use of Nuclear Energy while emphasizing the need for improved Safeguards and Proliferation Resistance.

*The National Energy Policy Development (NEPD) Group recommends that the President support **the expansion of nuclear energy** in the United States as a major component of our national energy policy*

(National Energy Policy, May 01)

Recommendations:

- ¥ Support expansion of nuclear energy in the U.S.
- ¥ Develop advanced nuclear fuel cycles and next generation technologies
- ¥ Develop advanced reprocessing and fuel treatment technologies



*The United States should also consider technologies (in **collaboration with international partners** with highly developed fuel cycles and a record of close cooperation) to **develop reprocessing** and fuel treatment technologies that are more **proliferation resistant**.*

(National Energy Policy, May 01)

*A new era awaits. It is an era of nuclear energy marked by **improved physical security and proliferation resistance**. Meeting it will go a long way towards **safeguarding each of our nations from the perils** posed by those seeking to acquire dangerous nuclear materials.*

(Secretary of Energy Abraham, Tokyo, Sept 03)



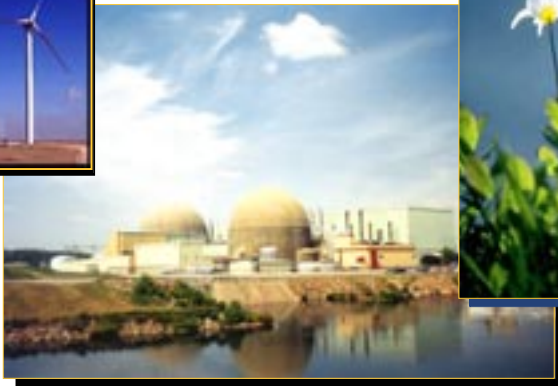


U.S. energy policy promotes emission free energy that is sustainable and economically viable.

Carbon Dioxide Concentrations

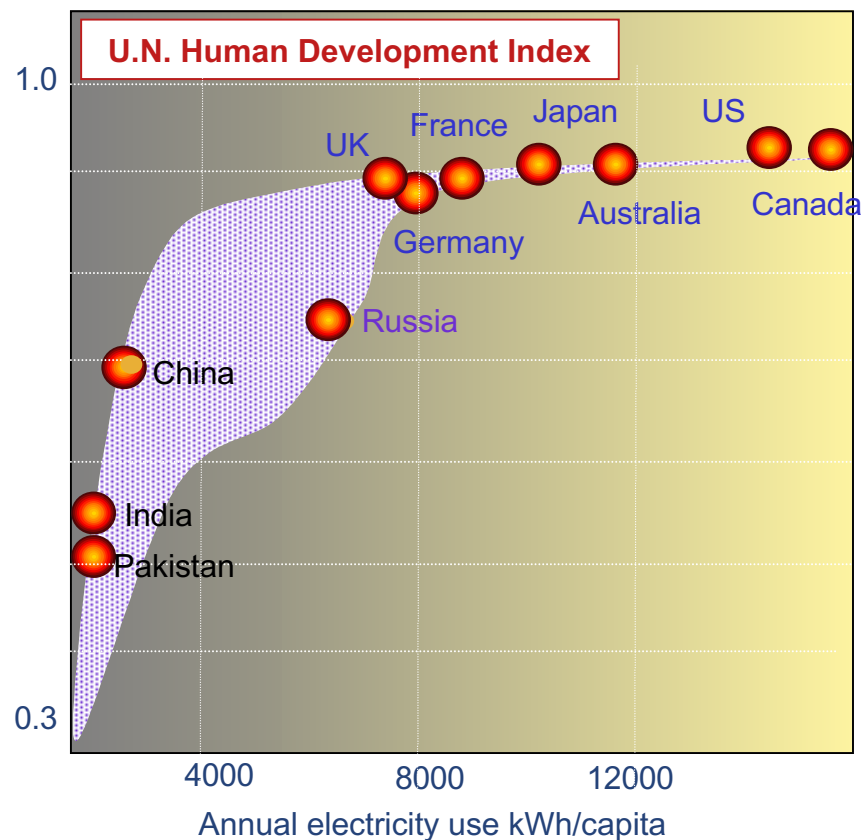


- Atmospheric CO₂ concentration approaching a record level of 380 ppm
- Tolerable levels estimated to be between 450 ppm and 750 ppm.
- ¥ Quickly approaching a carbon wall crisis with unknown, perhaps irreversible, consequences.
- Emission-free energy sources needed to meet the growing energy demand.
 - In the near future, nuclear power is the only large-scale technology that can compete with fossil fuels.
 - U.S. energy policy promotes the expansion of nuclear power while continuing research in renewable energy forms.





Meeting the growing energy demand of developing nations by clean energy forms is essential for world peace, prosperity and environmental integrity.



- Energy use will grow as developing countries achieve affluence.
- Affluence in developing countries will lead to more stable and peaceful world.
- 10 billion people consuming energy like us result in world energy demand by 10 fold.
- Increased use of fossil fuel will result in
 - Resource shortfalls and regional conflicts,
 - Serious environmental impact
- Worldwide expansion of nuclear energy use is a natural development.
- Nuclear material management is becoming an important International issue.



U.S. DOE initiated a number of initiatives to promote the growth of nuclear energy.

2010 Initiative

- Explore new sites
- Develop business case
- Develop Generation III+ technologies
- Demonstrate new NRC process

Advanced Fuel Cycle Initiative (AFCI)

- Recovery of energy value from SNF
- Reduce the inventory of civilian Pu
- Reduce the toxicity & heat of waste
- More effective use of the repository



Nuclear Hydrogen Initiative (NHI)

Develop technologies for economic, commercial-scale generation of hydrogen.

Generation IV (GEN IV)

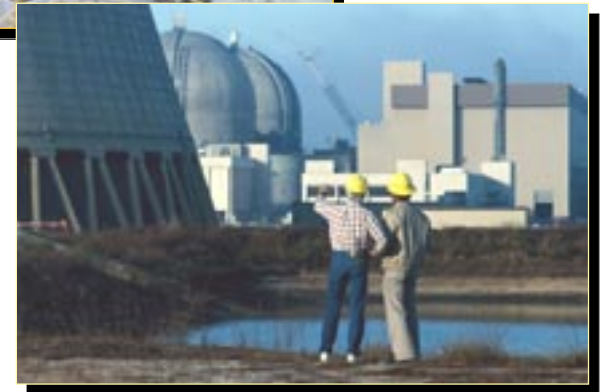
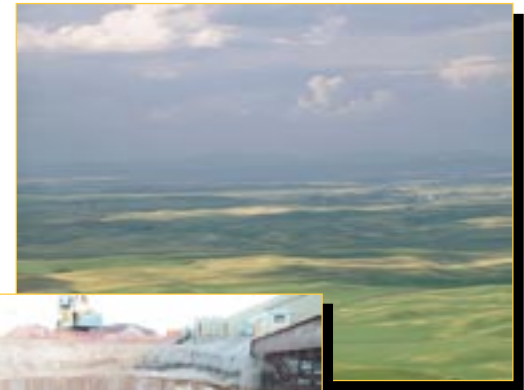
Better, safer, more economic nuclear power plant with improvements in

- safety & reliability
- proliferation resistance & physical protection
- economic competitiveness
- sustainability



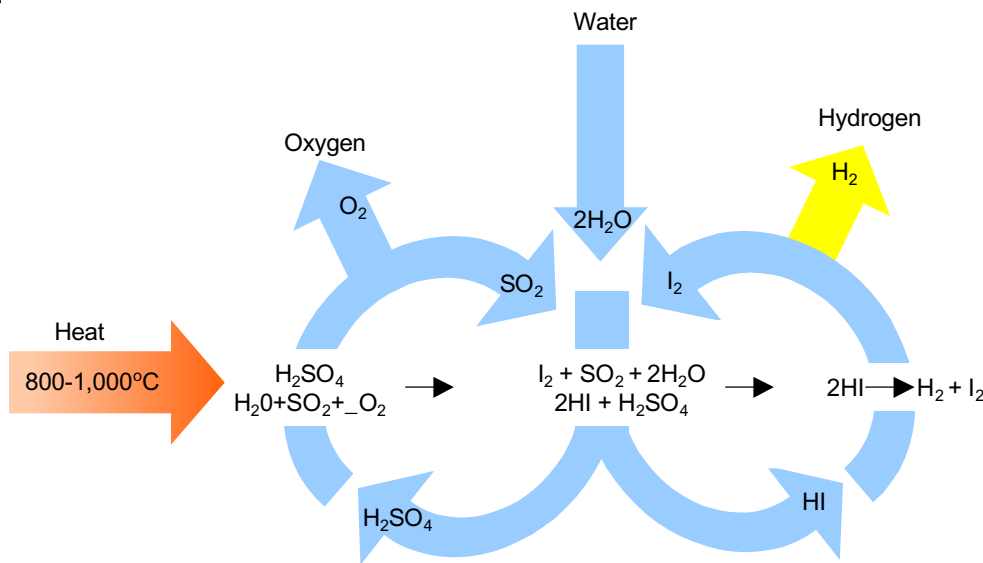
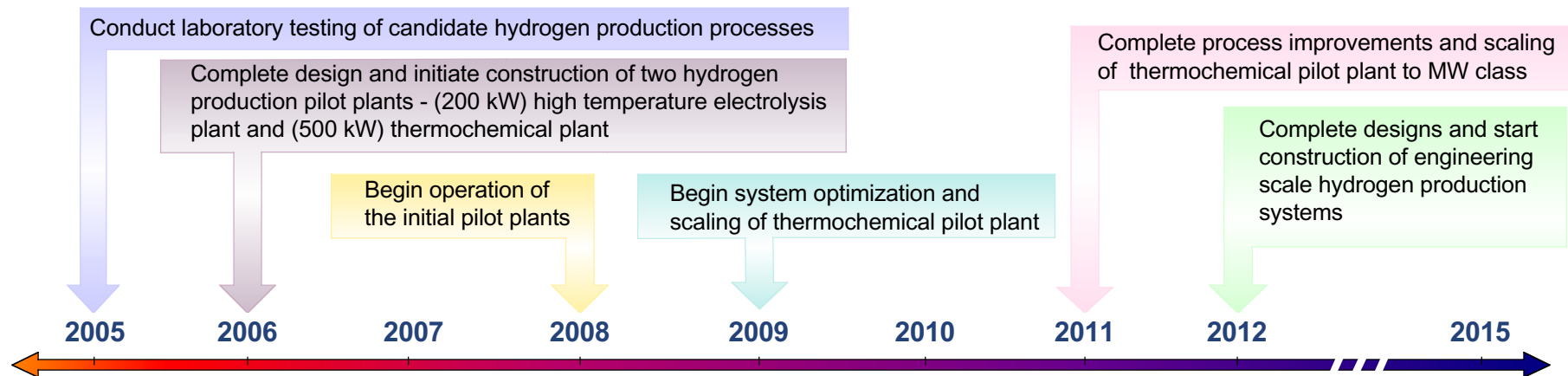
2010 Initiative is aimed at paving the way toward new plants by breaking through the next plant barrier .

- Completed scoping studies for 2 commercial sites and 3 federal sites.
- Completed Independent Business Case analysis.
 - Starting point for Congressional considerations of financial assistance.
- Next step is to usher Generation III+ technologies through NRC design certification process.
- Filed 3 environmental site permit (ESP) applications with NRC
 - Approval expected mid-2206 for Virginia, Illinois, and Mississippi.
- Next step is to demonstrate the one-step licensing process.





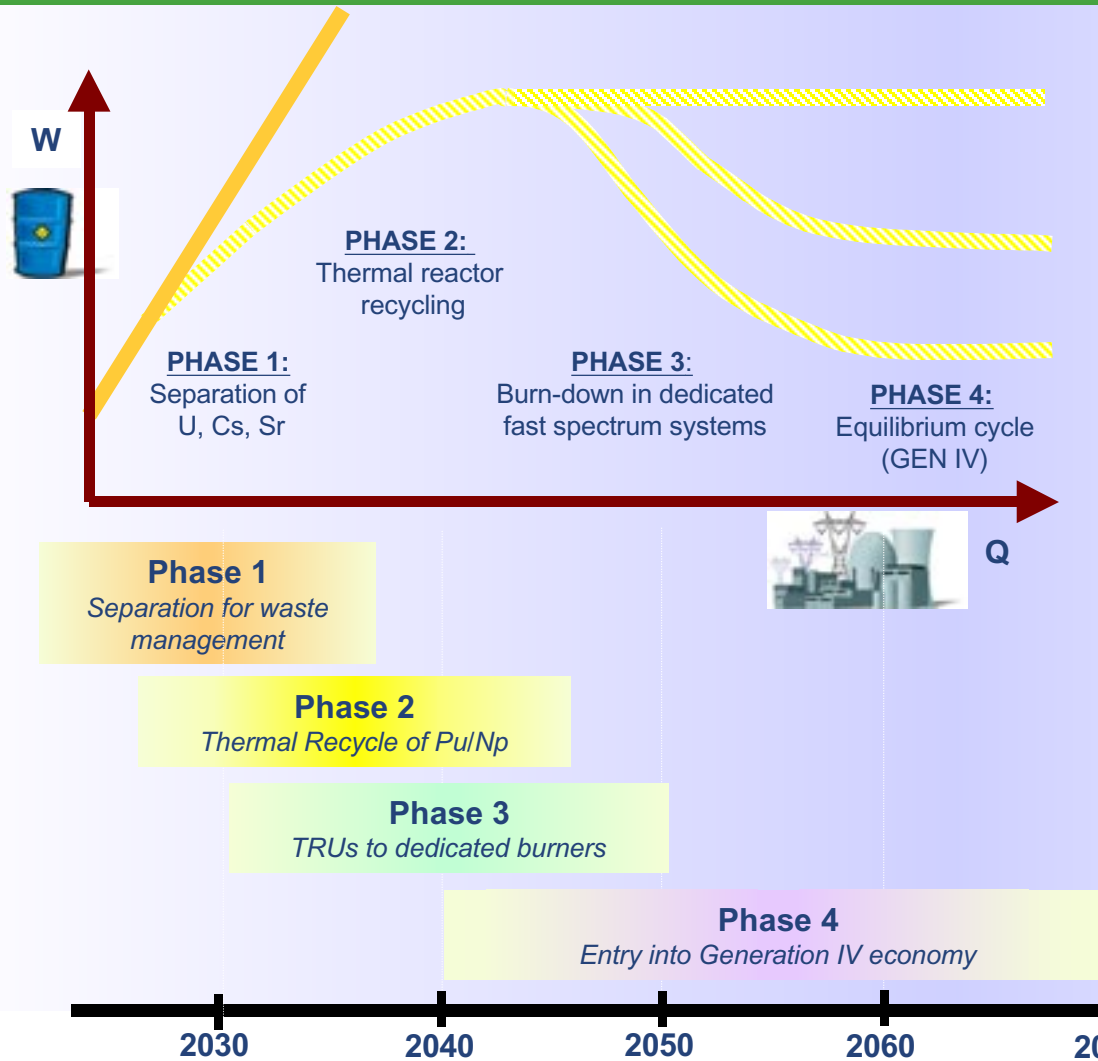
National Hydrogen Fuel Initiative set a far-sighted vision towards an emission-free future.



NHI's goal is to develop advanced hydrogen production technology as part of the Next Generation Nuclear Plant (NGNP) to demonstrate economic, commercial-scale hydrogen production.



Advanced Fuel Cycle Initiative (AFCI) is focused on fuel cycle research on current and future systems with emphasis on waste management.



AFCI's mission is to develop and demonstrate technologies that enable the transition to a stable, long-term, environmentally, economically and politically acceptable fuel cycle.

Intermediate- and long-term

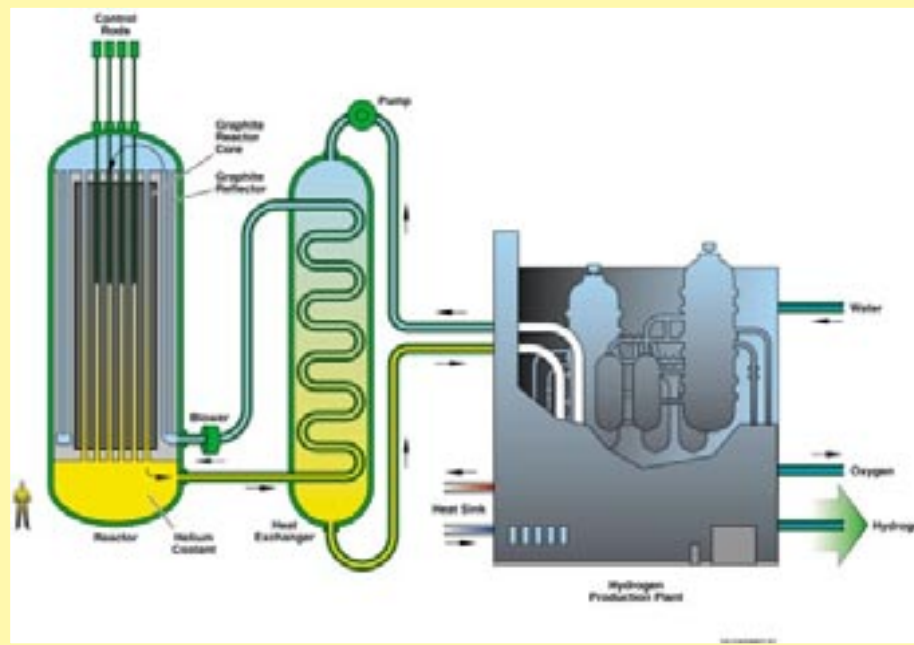
- separations,
- fuels, and
- transmutation

technologies for thermal and fast spectrum systems.



Generation IV Initiative (Gen IV) is primarily focused on advanced reactor concepts for the next generation of power plants.

NGNP pre-conceptual design completion in 2005



One NGNP will be able to produce the H_2 equivalent of 200,000 gallons of gasoline in each day.

GEN IV's mission is to develop and demonstrate advanced nuclear energy systems that meet future needs for safe, sustainable, environmentally responsible, economical, proliferation resistant and physically secure energy.

In Sept 02, GIF selected **6 systems** for further development:

- Very High Temperature Reactor (VHTR)
- Supercritical Water Reactor (SWR)
- Molten Salt Reactor (MSR)
- Gas-Cooled Fast Reactor (GFR)
- Lead-Cooled Fast Reactor (LFR)
- Sodium-Cooled Fast Reactor (SFR)



We have a new vision today to establish *Atoms for Prosperity* for future generations.

The last 50 years saw the realization of Eisenhower's vision of *Atoms for Peace*



Peaceful power from atomic energy is no dream of the future. That capability, already proved, is here now - today.
-President Eisenhower



- Nuclear power: the energy source of choice worldwide for many decades to come.
- Clean, safe, reliable and sustainable energy essential for world's peace and prosperity and for environmental integrity.
- U.S. is looking into reducing its dependence on foreign energy sources by increasing its domestic supply of clean energy.
- In the U.S., a number of forward-looking nuclear energy initiatives are ongoing.
- AFCI and GEN IV initiatives are enjoying strong International Collaboration.
- *It may be an imperative for developed nations to promote the peaceful use of nuclear energy while developing a joint strategy for nuclear material management worldwide.*